

**Industri-plex Superfund Site Operable Unit 2
(including Wells G&H Superfund Site
Operable Unit 3)
Proposed Plan
Public Informational Meeting**

June 30, 2005



Overview of Process

- Feasibility Study
- Proposed Plan (EPA's preferred alternative)
- Public Comment Period
 - Public Meeting (tonight)
 - Public Hearing (July 27th)
- Record of Decision with Responsiveness Summary

Feasibility Study - Purpose

- Purpose
 - Based on Remedial Investigation/Risk Assessments, identify and evaluate potential cleanup technologies
 - Comply with Federal Regulations (CERCLA and the National Contingency Plan (NCP))
- Methodology
 - Identify, screen, and compare cleanup options
 - Methodology applied to craft Proposed Plan (EPA's "preferred alternative" for cleanup).

Feasibility Study - Process

- Identify pertinent federal/state regulations (aka “ARARs”)
- Determine site-specific cleanup objectives and standards
 - Based on site-specific risk assessments
- Identify potential remediation technologies
- Screen appropriate technologies
- Assemble applicable alternatives
- Conduct a detailed alternative evaluation
 - Compare to NCP nine criteria
 - Compare alternatives against each other

Nine Criteria for Remedy Selection

- Threshold Criteria:
 - 1) Overall Protection of Human Health and the Environment (“Protectiveness”)
 - 2) Compliance with ARARs
- Balancing Criteria:
 - 3) Long-term Effectiveness and Permanence
 - 4) Reduction in Toxicity, Mobility, and Volume
 - 5) Short-term Effectiveness
 - 6) Implementability
 - 7) Cost

Nine Criteria For Remedy Selection

- Modifying Criteria:
 - 8) State Acceptance
 - 9) Community Acceptance
- State Acceptance memorialized by state's concurrence on EPA's Record of Decision
- Community Acceptance evaluated during formal public comment period – based on comments received on the Proposed Plan

How to Comment

- Public Comment Period ends August 1, 2005
 - Submit comments in writing by fax, email, or letter.
- Public Hearing July 27, 2005
 - Verbal comments will be transcribed
- EPA will respond in writing to comments in a “Responsiveness Summary” to accompany the Record of Decision (ROD)

Where to Comment

- Submit Comments to:

Joseph F. LeMay
EPA - New England, Region 1
1 Congress Street
Suite 1100 HBO
Boston, MA 02114-2023

Email or Fax by midnight 8/1/05 to:
Email: lemay.joe@epa.gov
Fax: 617-918-1323

- Verbal Comments at Public Hearing on 7:00 PM
Wednesday, July 27, 2005 at Shamrock School

Industri-plex Site

- ❖ Chemical and glue manufacturing from 1853 to the late 1960s
- ❖ Wastes included heavy metals (arsenic, chromium, lead) and VOCs (benzene, toluene)
- ❖ development in the 1970's disturbed and re-distributed wastes at the Site.
- ❖ Cleanup decision (ROD) signed in 1986. Major components include:
 - Capping of 110 acres of soils and hide piles
 - Impermeable cap and gas collection/treatment system at the East Hide Pile
 - Perform additional groundwater and surface water investigations

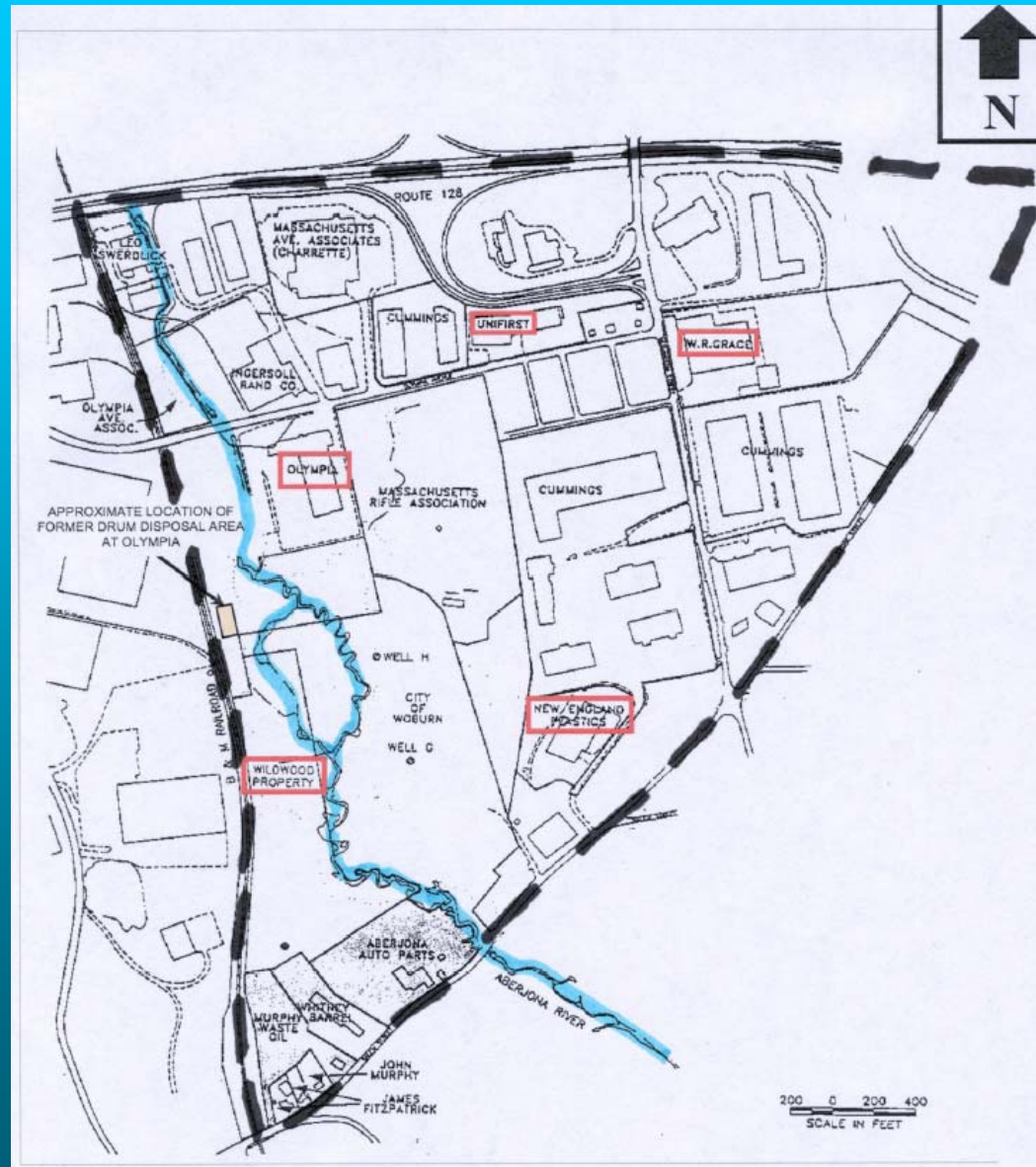


Progress @ Industriplex

- ❖ Air Remedy was completed in 1996
- ❖ Soil Remedy was completed in 1998
- ❖ GSIP was completed in 2004
- ❖ Industri-plex OU-2 MSGRP RI (including Wells G&H OU-3 Aberjona River Study) was completed in March 2005 (Draft Final RI Report)



Wells G&H Site

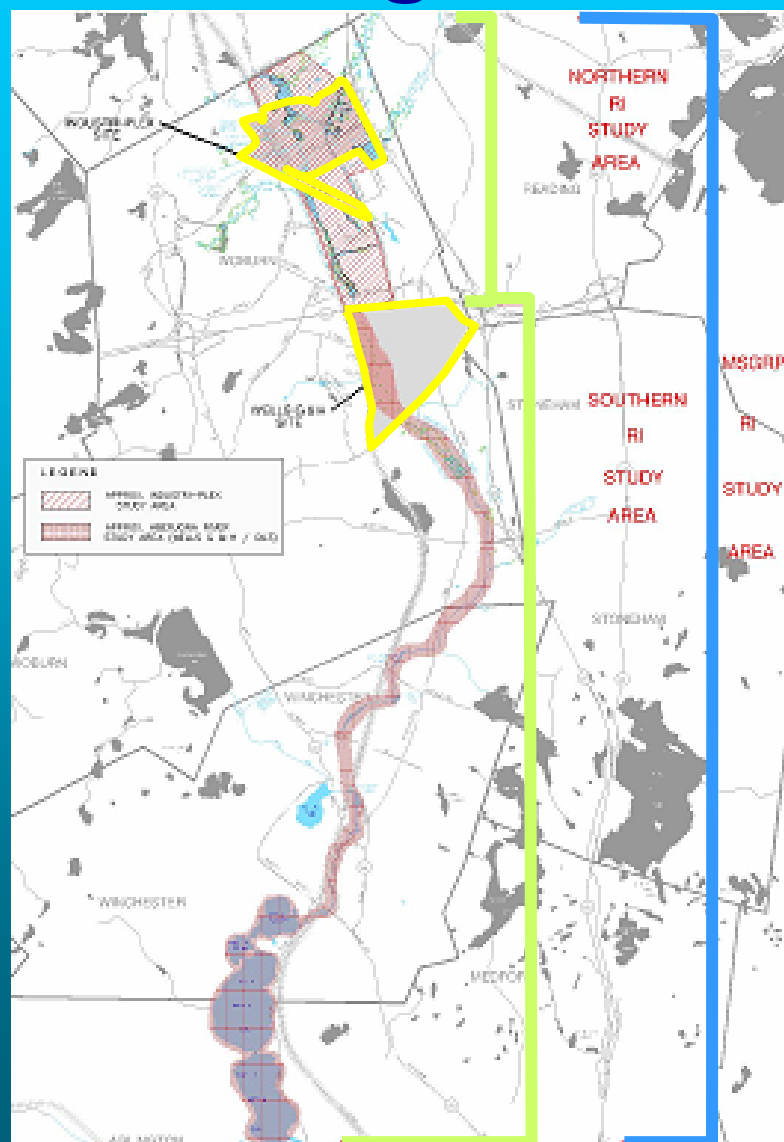


Progress @ Wells G&H

- OU-1 Source Areas:
 - 3 pump & treat systems on-going
 - SVE conducted at 4th property
 - 5th property, Olympia, beginning In-Situ Chemical Oxidation this summer
- OU-2 Central Area Aquifer:
 - Remedial Investigation on-going
- OU-3 Aberjona River Study:
 - Merged with Industri-Plex Operable Unit 2

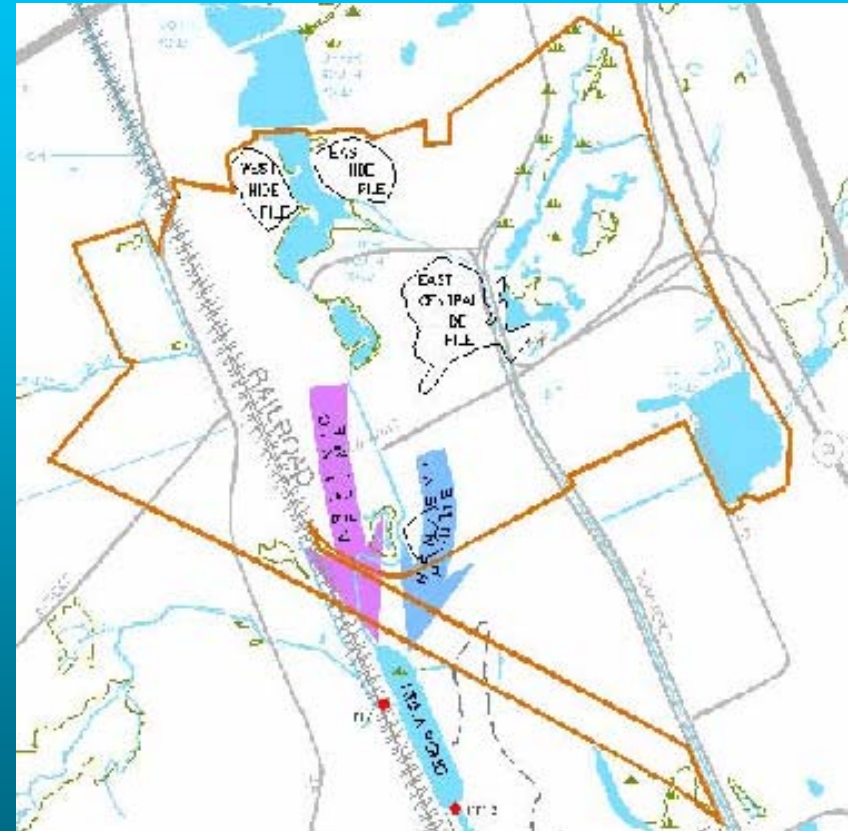
MSGRP Remedial Investigation

- ❖ In 2002, EPA merged Wells G&H Aberjona River Study (OU-3) to the Industri-plex Site comprehensive investigation for surface water and sediment.
- ❖ Northern RI Study Area includes the Industri-plex Site and the Aberjona River up to I-95/Rt 128
- ❖ Southern RI Study Area includes the Aberjona River from I-95 to the Mystic Lakes, including the wetland located within the Wells G&H Site



Fate and Transport of Key Contaminants

- ❖ Geochemical conditions in groundwater dissolve arsenic that exists in the soil matrix
- ❖ Dissolved arsenic and benzene flow with groundwater and discharge to the HBHA Pond



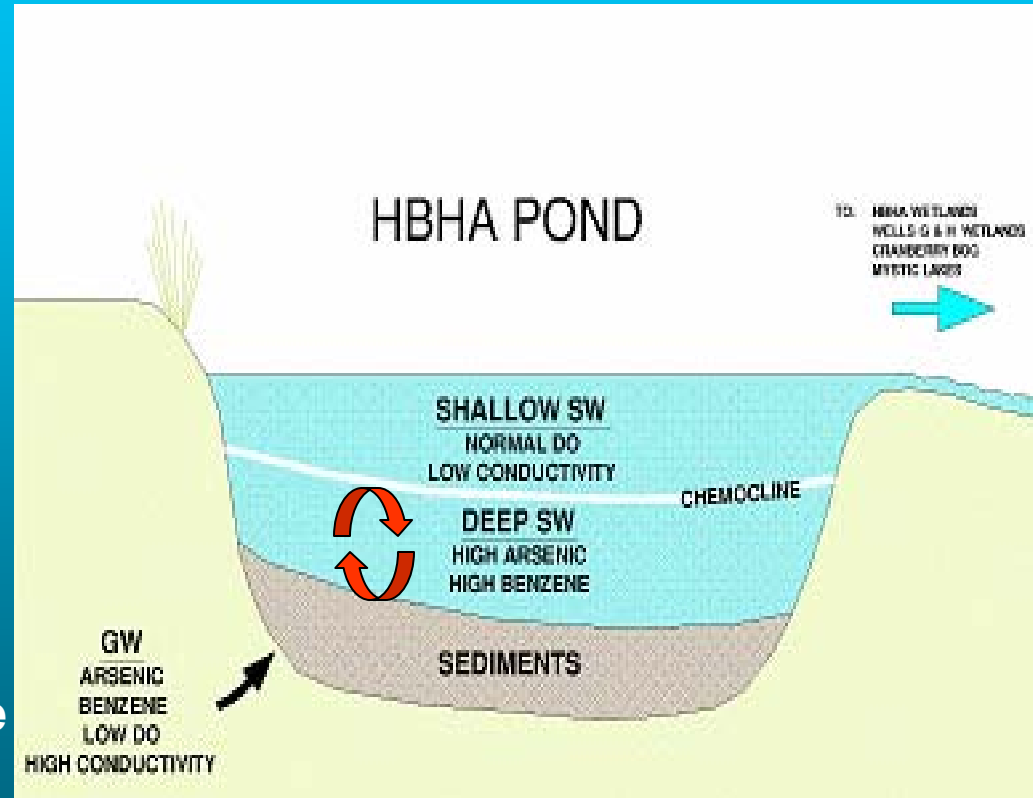
Fate and Transport of Key Contaminants

- ❖ A “chemocline” exists in HBHA Pond.

HALLS BROOK SURFACE WATER
(normal DO, low conductivity)

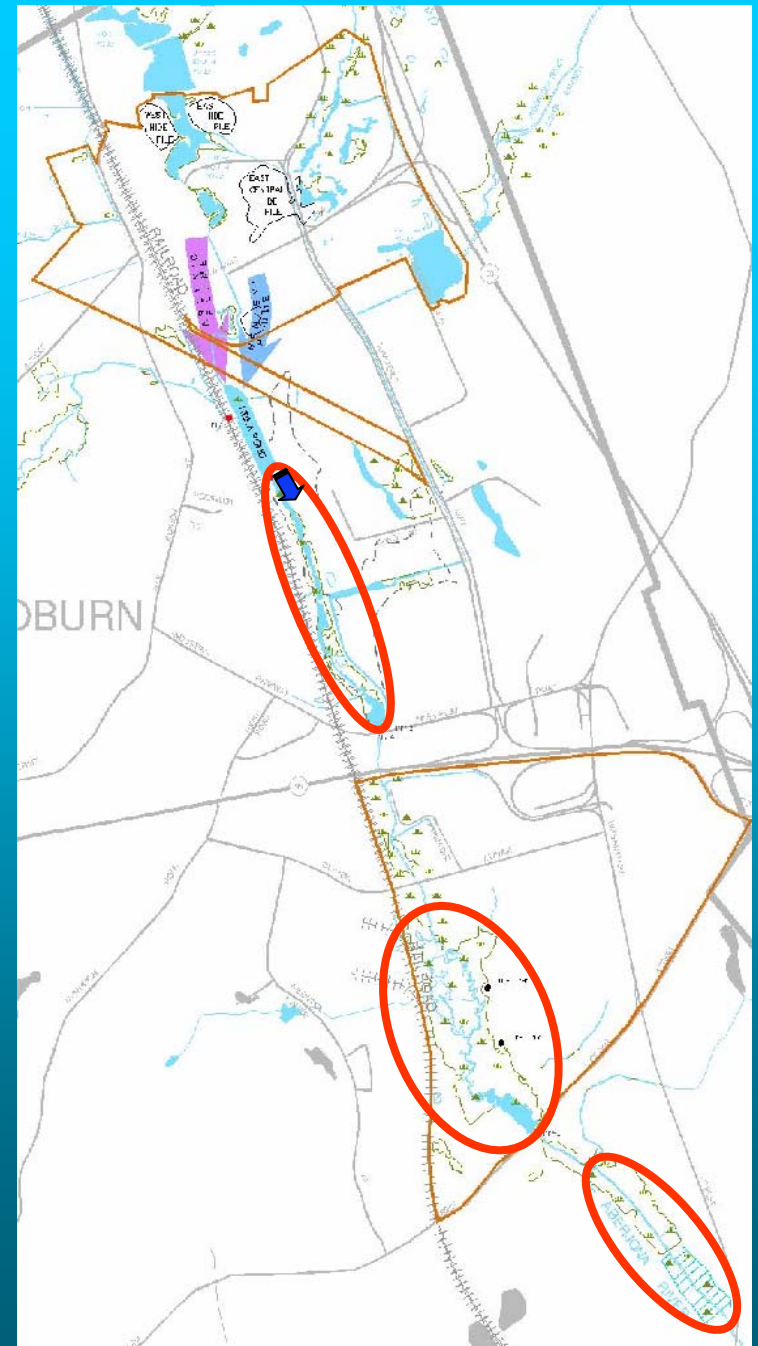
GROUNDWATER
(Arsenic, Benzene, Low DO, High conductivity)

- ❖ Chemocline keeps most of the arsenic that is discharged from groundwater below the chemocline and within the sediment layer.
- ❖ Benzene is mostly biodegraded at the chemocline.



Fate and Transport of Key Contaminants

- ❖ High storm event flows break down the chemocline, stir up the bottom sediments, and “flush” contaminated sediments downstream
- ❖ Most significant depositional areas
 - HBHA Wetlands
 - Wells G&H 38-acre Wetlands
 - Cranberry Bog Conservation Area



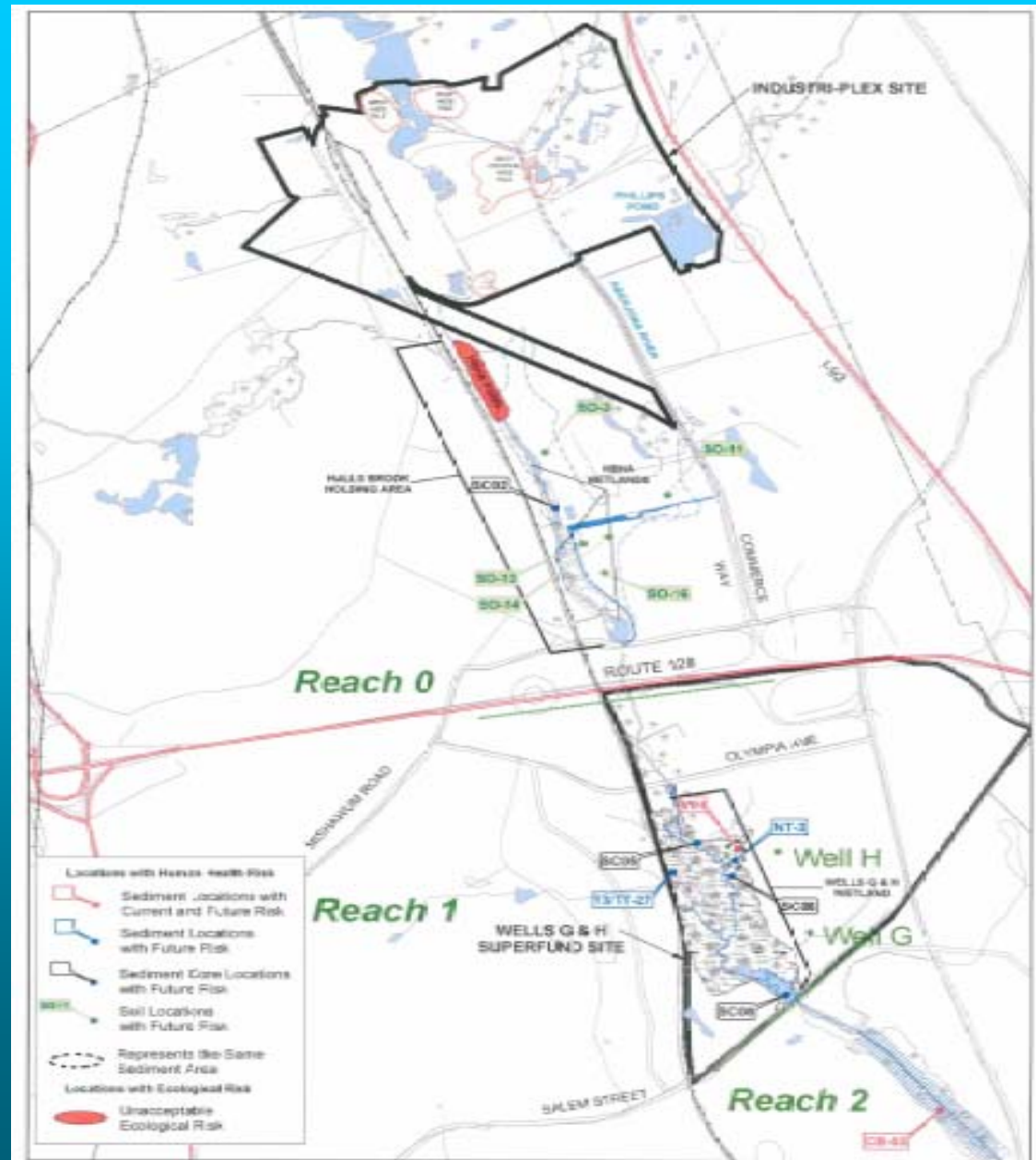
Soil/Sediment/SW Risks

Ecological Risk:

- **Arsenic in HBHA Pond sediment and deep surface water, as well as benzene in deep surface water**

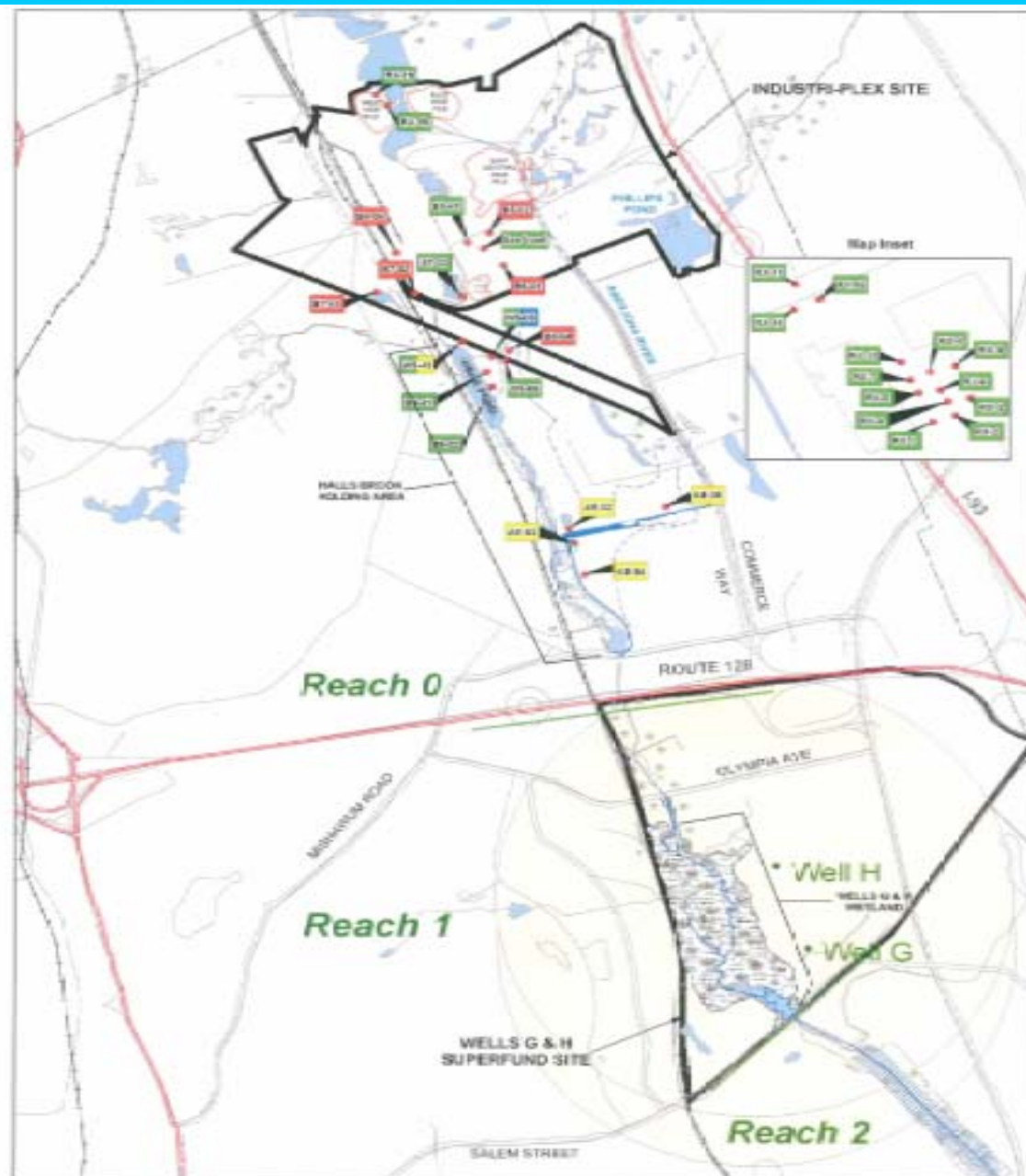
Human Health Risks:

- **Arsenic in Soil at Fmr. Mishawum Lake Bed**
 - Future Day Care Child and Future Construction Worker
- **Arsenic in Accessible Sediment at Reaches 1 & 2**
 - Current or future recreational exposure
- **Arsenic in Sediment Cores at HBHA Wetlands and G&H Wetlands**
 - Future Dredger



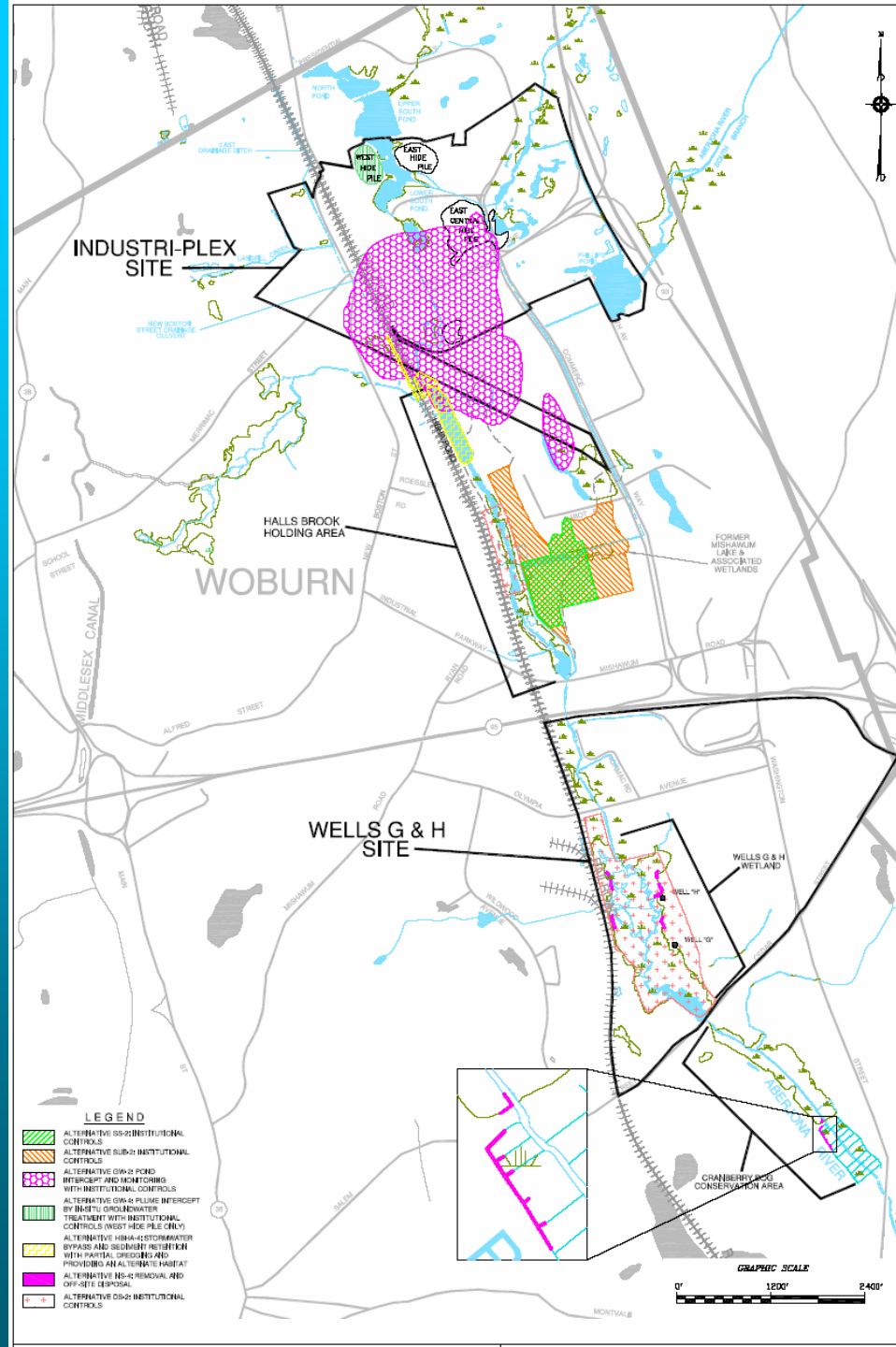
Groundwater Risks

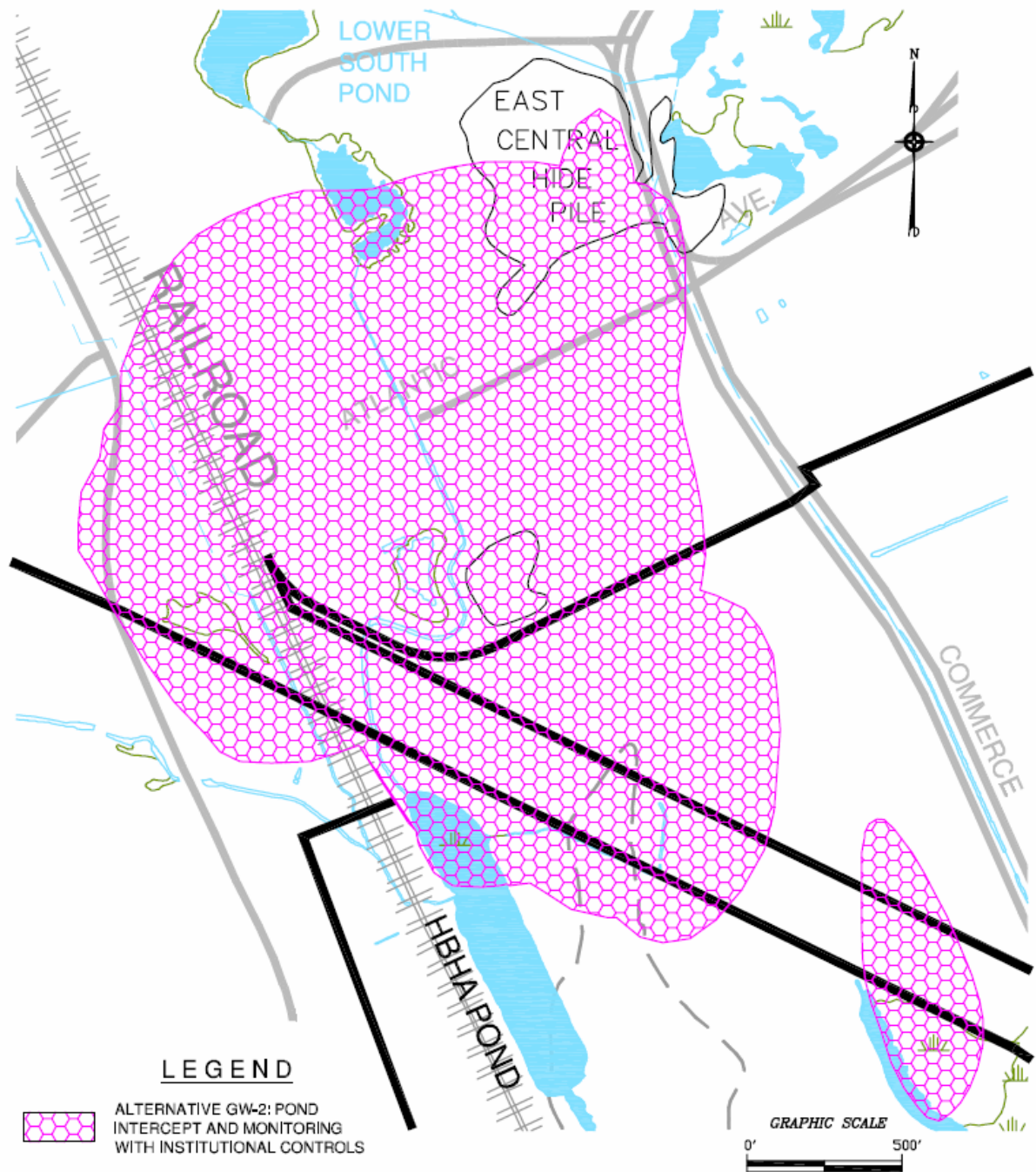
- **Future Construction Worker**
 - Arsenic in Shallow Groundwater
- **Future Industrial Worker**
 - Primarily arsenic, benzene, naphthalene, and trichloroethene
 - Minor contribution from 1,2-dichloroethane
- **Future Car Wash Worker**
 - Primarily benzene, naphthalene, and trichloroethene
 - Minor contribution from 1,2-dichloroethane



Proposed Plan

- Total Estimated Costs \$25.7 Million
- Breakdown of Preferred Alternatives and Costs:
 - **GW-2: Pond Intercept, Monitoring and Institutional Controls: \$3.9 M**
 - **Portion of GW-4: In-situ Enhanced Bioremediation at West Hide Pile: \$3.8 M**
 - **HBHA-4: Storm Bypass, Sediment Retention, Partial Dredging and Providing Alternate Habitat: \$9.2 M**
 - **NS-4: Removal and Off-site Disposal: \$3.2 M**
 - **DS-2: Institutional Controls: \$ 0.5 M**
 - **SW-2: Monitoring: \$3.2 M**
 - **SS: Institutional Controls with Monitoring: \$0.6 M**
 - **SUB: Institutional Controls with Monitoring: \$1.3 M**

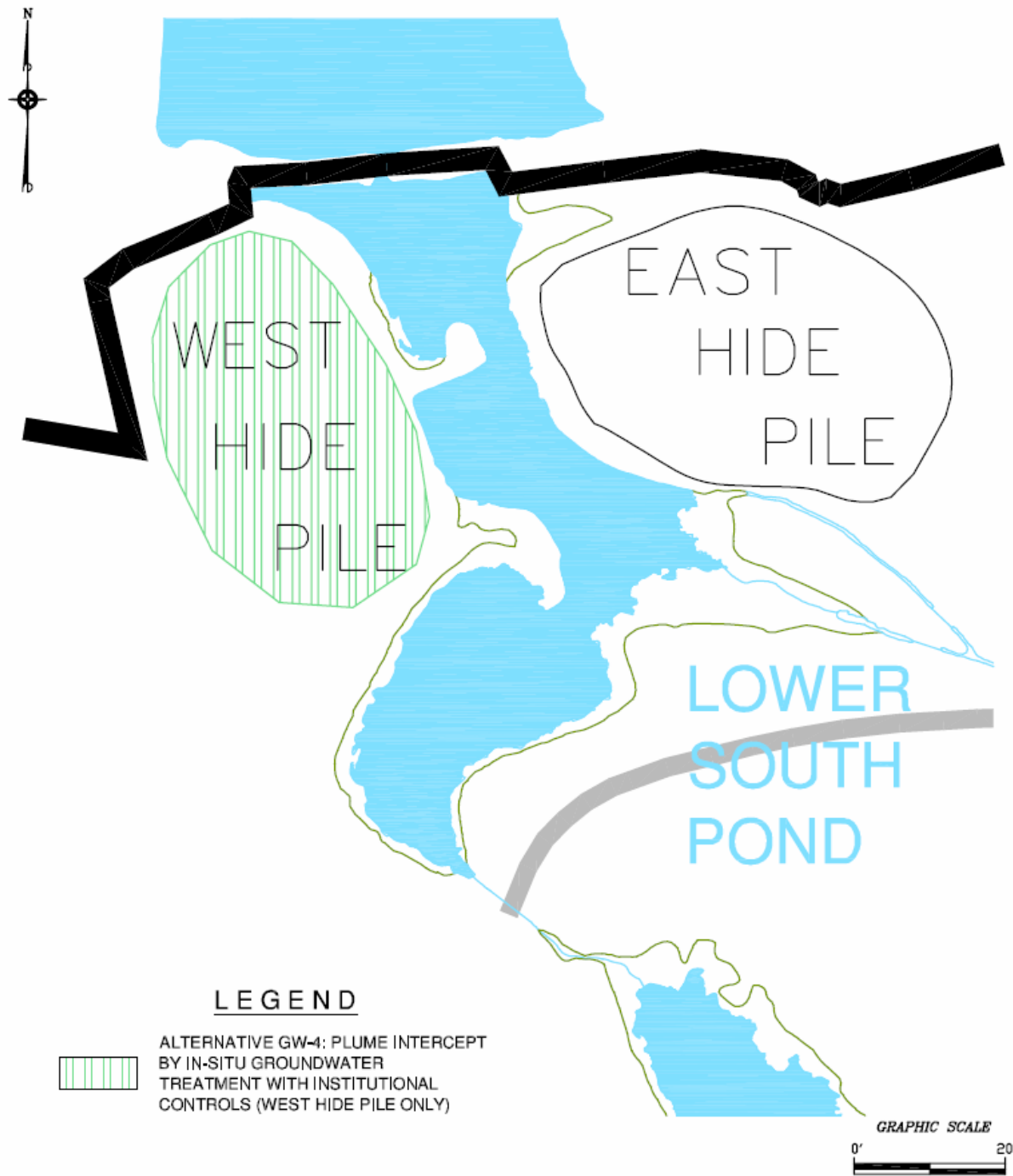




Preferred Groundwater Alternative: GW-2

Pond Intercept with Monitoring and Institutional Controls

- Protects human health by preventing or controlling potential exposures to contaminated groundwater through institutional controls.
- Coupled with Sediment Alternative HBHA-4, this alternative also controls downstream migration of contaminated groundwater by intercepting it at the northern portion of the HBHA Pond.
- Monitoring is required to evaluate the effectiveness of the remedy.

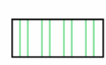


WEST
HIDE
PILE

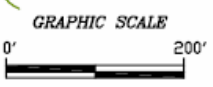
EAST
HIDE
PILE

LOWER
SOUTH
POND

LEGEND



ALTERNATIVE GW-4: PLUME INTERCEPT
BY IN-SITU GROUNDWATER
TREATMENT WITH INSTITUTIONAL
CONTROLS (WEST HIDE PILE ONLY)



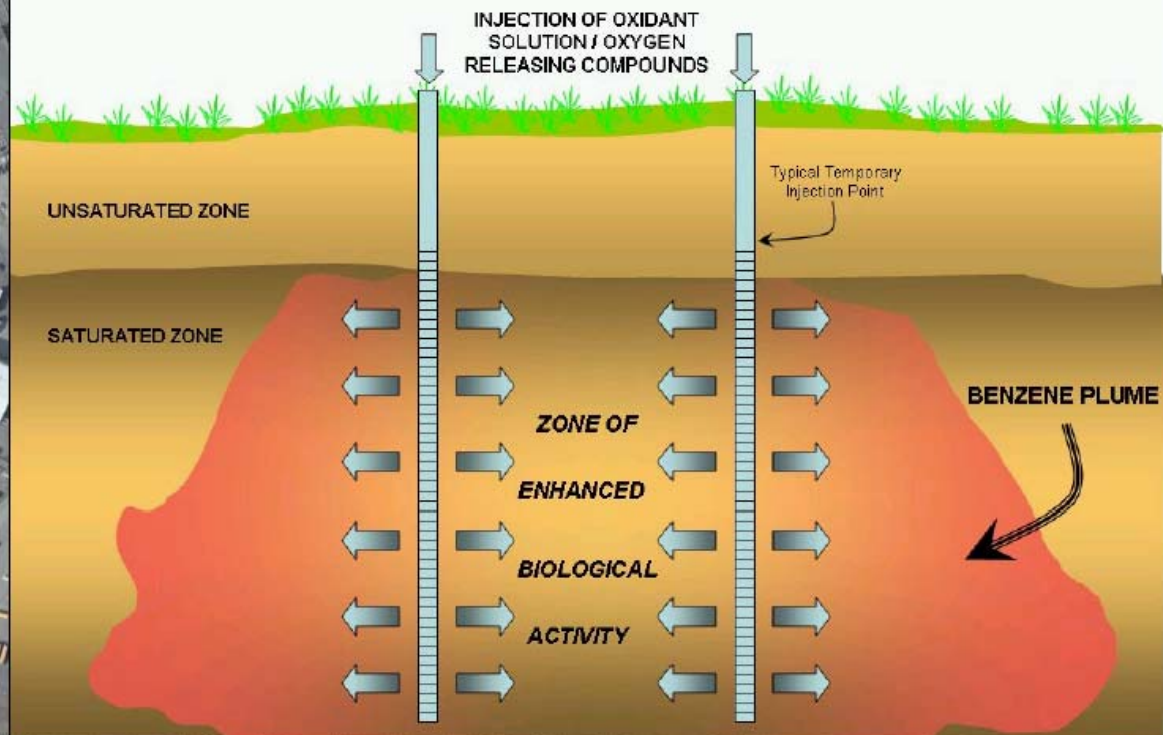
Portion of Alternative GW-4 Preferred for West Hide Pile

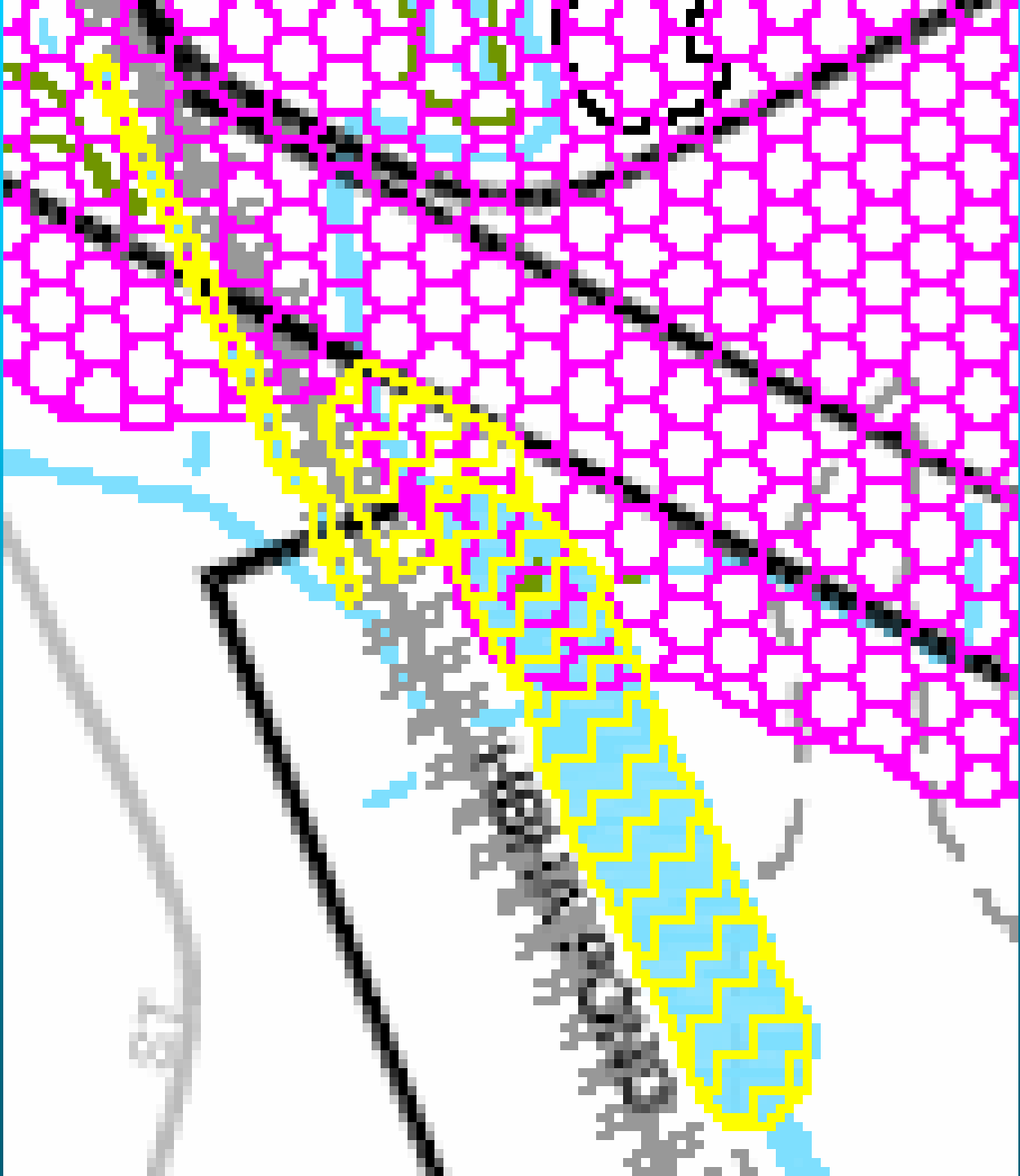
- In-situ Enhanced Bioremediation will be used to treat benzene contamination at the West Hide Pile.
- Includes institutional controls to protect human health and monitoring to evaluate the effectiveness of the remedy.

ENHANCED BIOREMEDIATION TREATMENT AREA



ENHANCED BIOREMEDIATION PROCESS



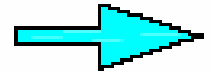


Preferred HBHA Pond Sediment Alternative: HBHA-4 Storm Water Bypass and Sediment Retention with Partial Dredging and Providing Alternate Habitat

- **Divides Pond into northern and southern portions by a system of cofferdams.**
- **Southern Portion: Sediments will be dredged, disposed of off-site, and the area restored.**
- **Northern Portion: Incorporated into the cleanup remedy as a sediment retention area to:**
 - **Intercept contaminated groundwater;**
 - **Minimize contaminants migration downstream;**
 - **Maintain chemocline in surface water to degrade and sequester contamination;**
 - **Aerate surface water between cofferdams to enhance treatment;**
 - **Periodically dredge and dispose of accumulated sediments off-site.**

HBHA POND

TO: HBHA WETLANDS
WELLS G & H WETLANDS
CRANBERRY BOG
MYSTIC LAKES



SHALLOW SW
NORMAL DO
LOW CONDUCTIVITY

CHEMOCLINE

DEEP SW
HIGH ARSENIC
HIGH BENZENE

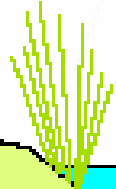


**RESTORED
SOUTHERN
POND**

SEDIMENTS

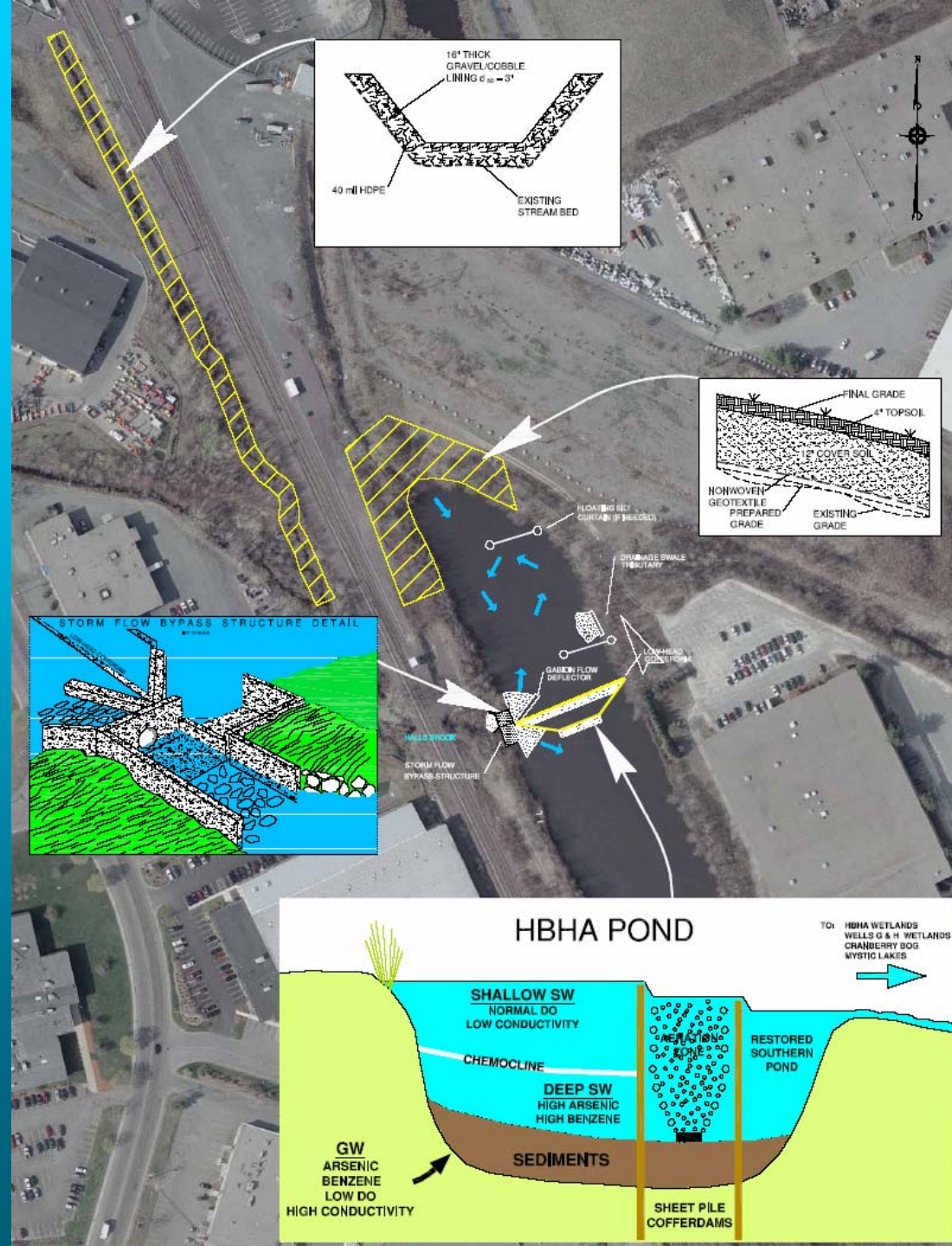
**SHEET PILE
COFFERDAMS**

GW
ARSENIC
BENZENE
LOW DO
HIGH CONDUCTIVITY



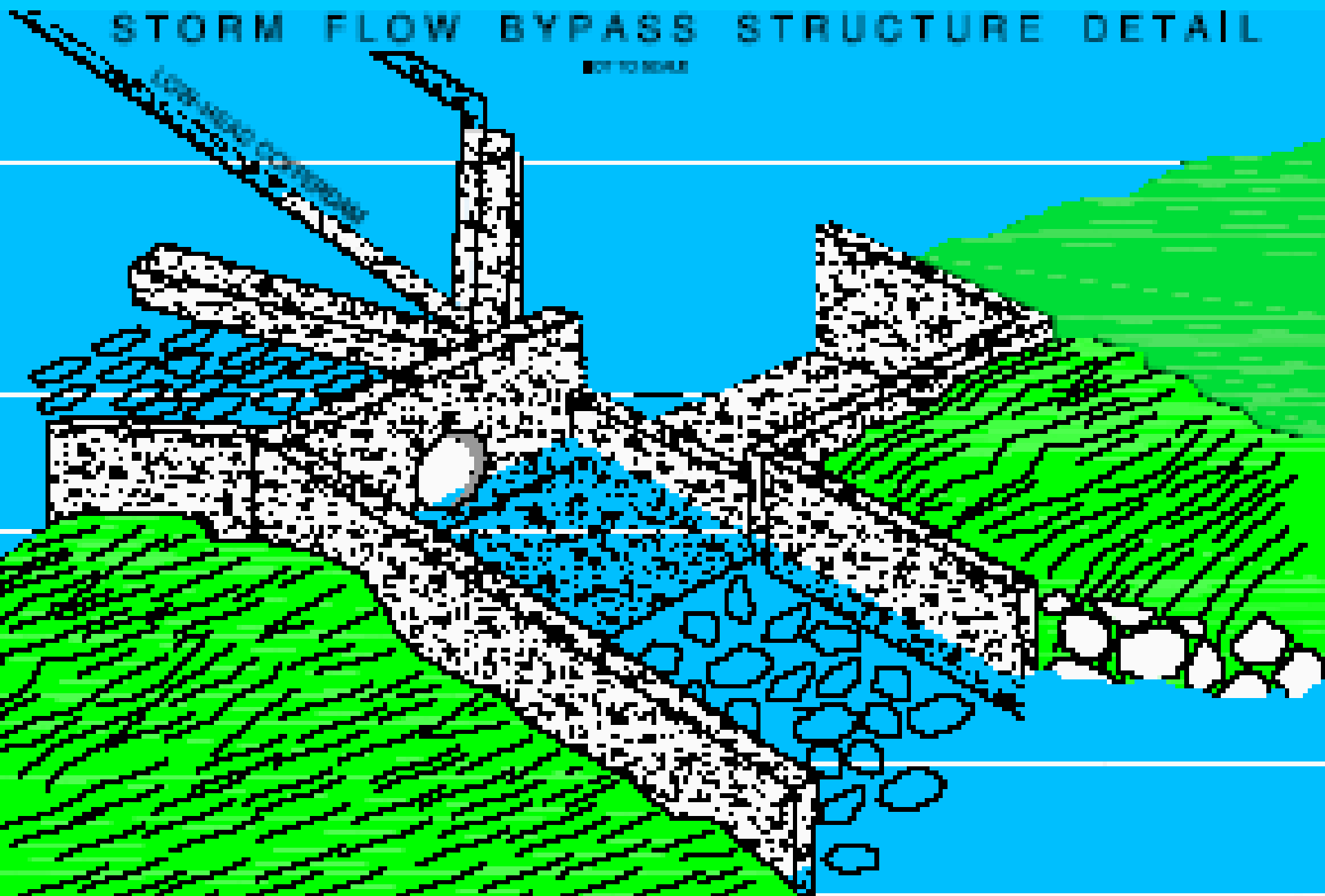
Continued:

- **Construct Storm water bypass at Halls Brook to divert flow to southern portion.**
- **Cap and stabilize sediments along 1,000 linear feet of the New Boston Street drainway with impermeable cap.**
- **Cap and stabilize soils adjacent to NSTAR and MBTA rights-of-way with permeable cap.**
- **Compensate elsewhere in watershed for wetlands loss in the northern portion of the Pond and along New Boston Street drainway.**
- **Long-term maintenance, inspections and monitoring to evaluate the effectiveness of the remedy.**



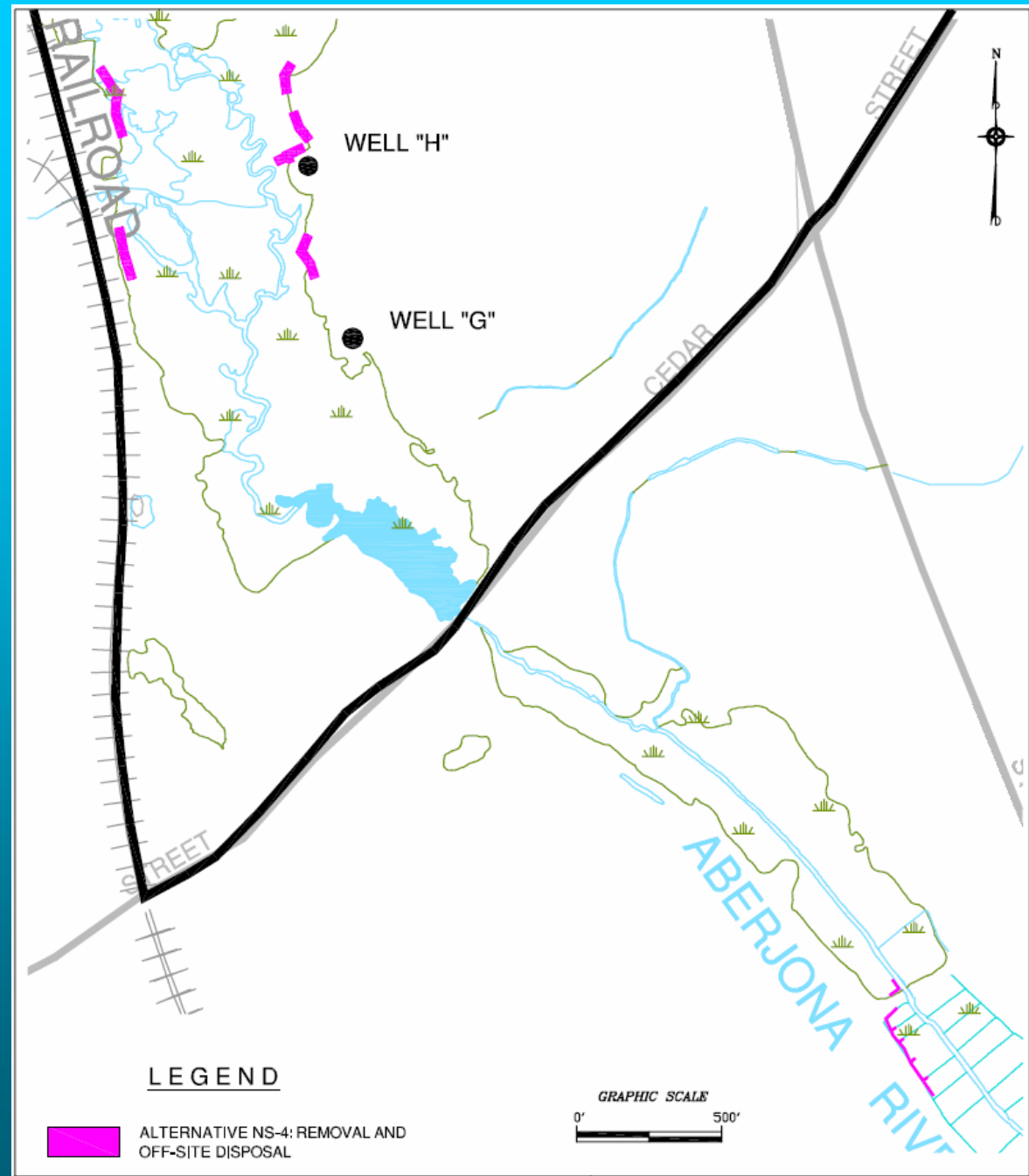
STORM FLOW BYPASS STRUCTURE DETAIL

NOT TO SCALE



Preferred Near Shore Sediment Alternative NS-4: Removal and Off-site Disposal

- Near Shore sediments at Wells G&H Wetland and Cranberry Bog Conservation Area will be removed, and disposed of off-site, and the area restored.

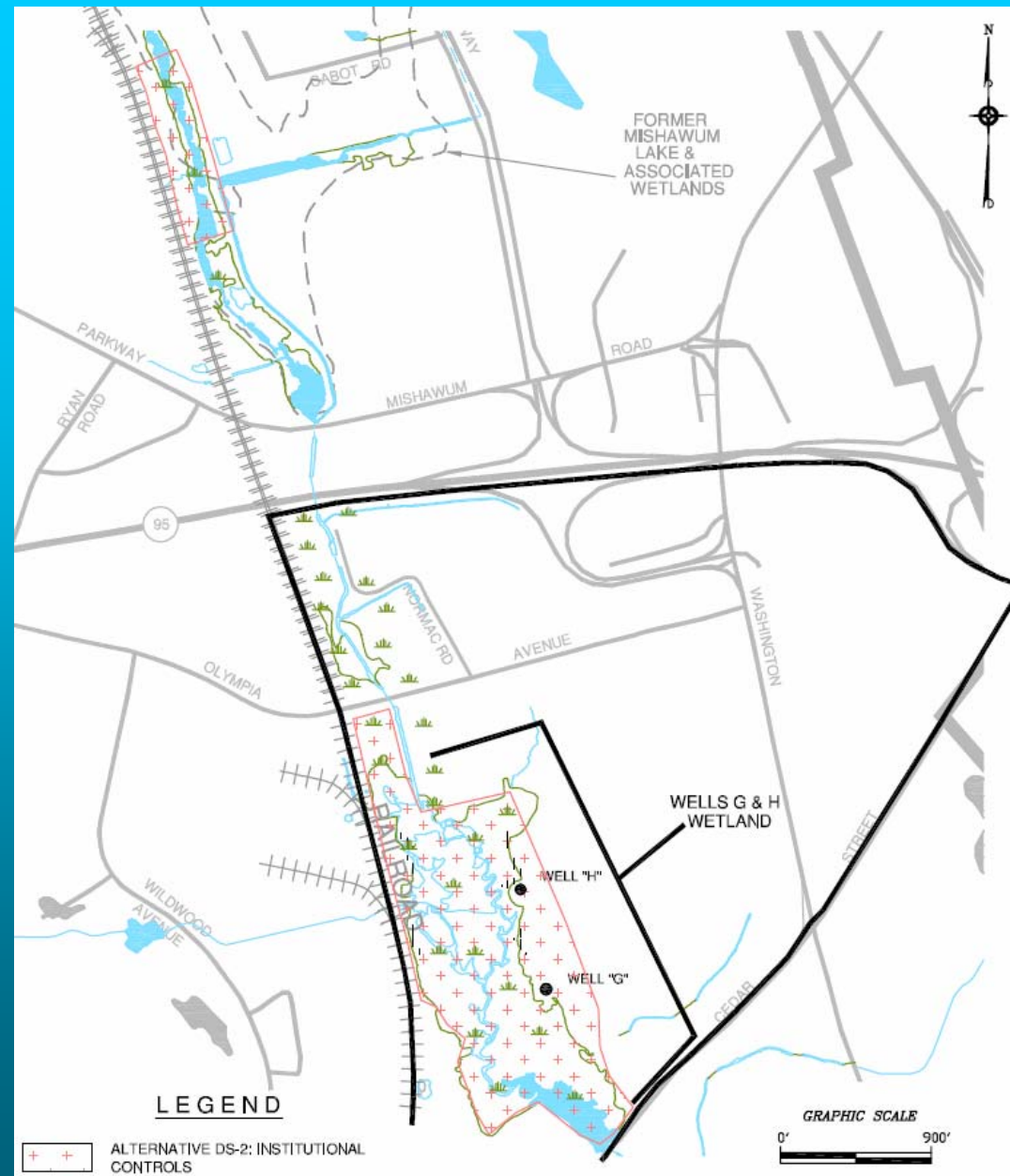


Near Shore (NS) Sediment Areas Slated for Excavation



Preferred Deeper Wetland Sediment Alternative DS-2: Institutional Controls

- Institutional controls to prevent or control potential exposures to contaminated sediments during potential future dredging activities.
- Long-term monitoring to evaluate the effectiveness of the remedy.

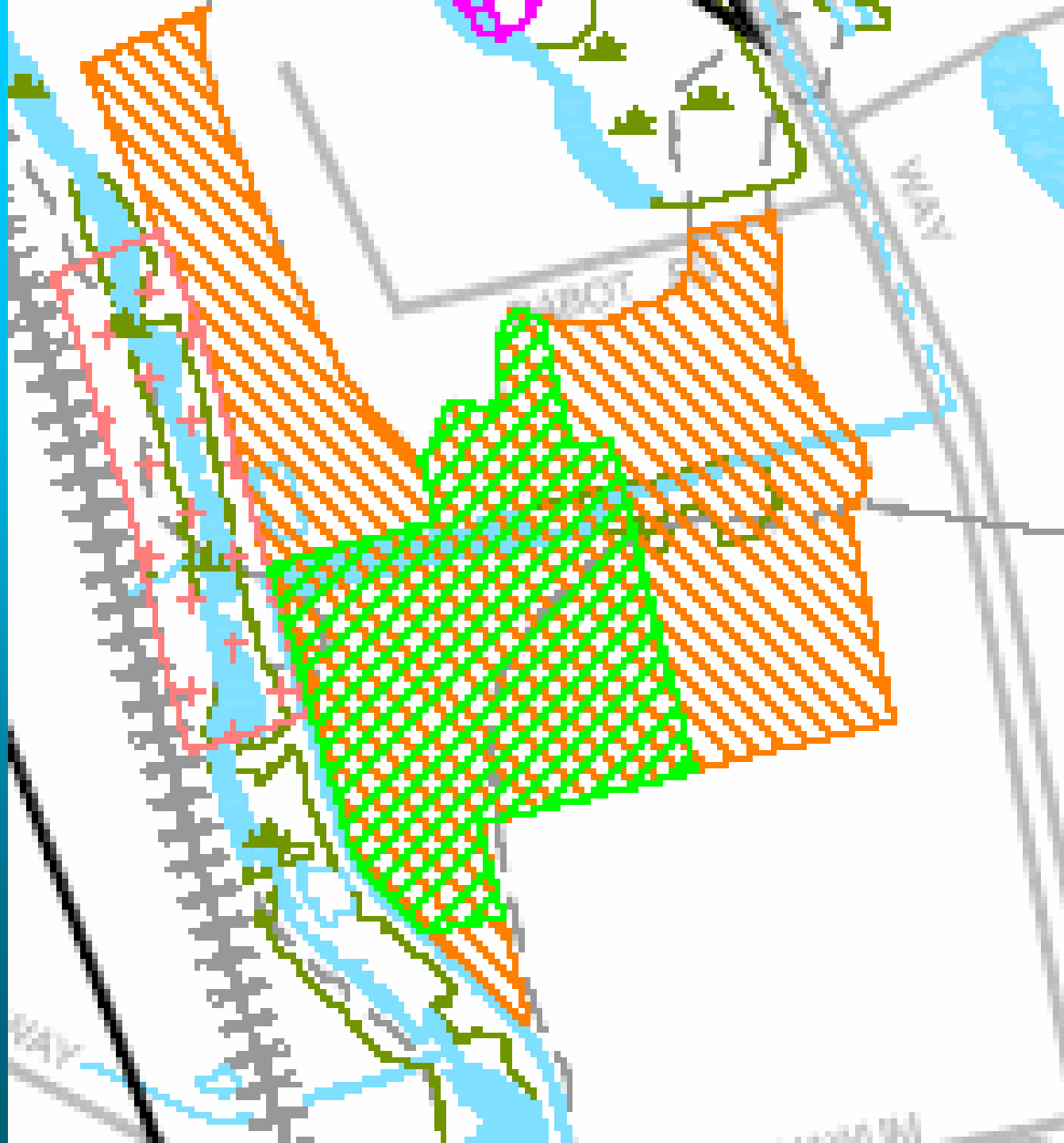




Preferred Surface Water Alternative

SW-2: Monitoring

- Surface water at the HBHA Pond is impacted by contaminated groundwater discharge. Monitoring is the preferred alternative, since contaminated groundwater and sediments at the Pond are being addressed through preferred alternatives GW-2 and HBHA-4.
- Includes monitoring to evaluate the effectiveness of the remedy.



Preferred Surface (SS) and Subsurface Soil (SUB) Alternatives SS-2 and SUB-2: Institutional Controls with Monitoring

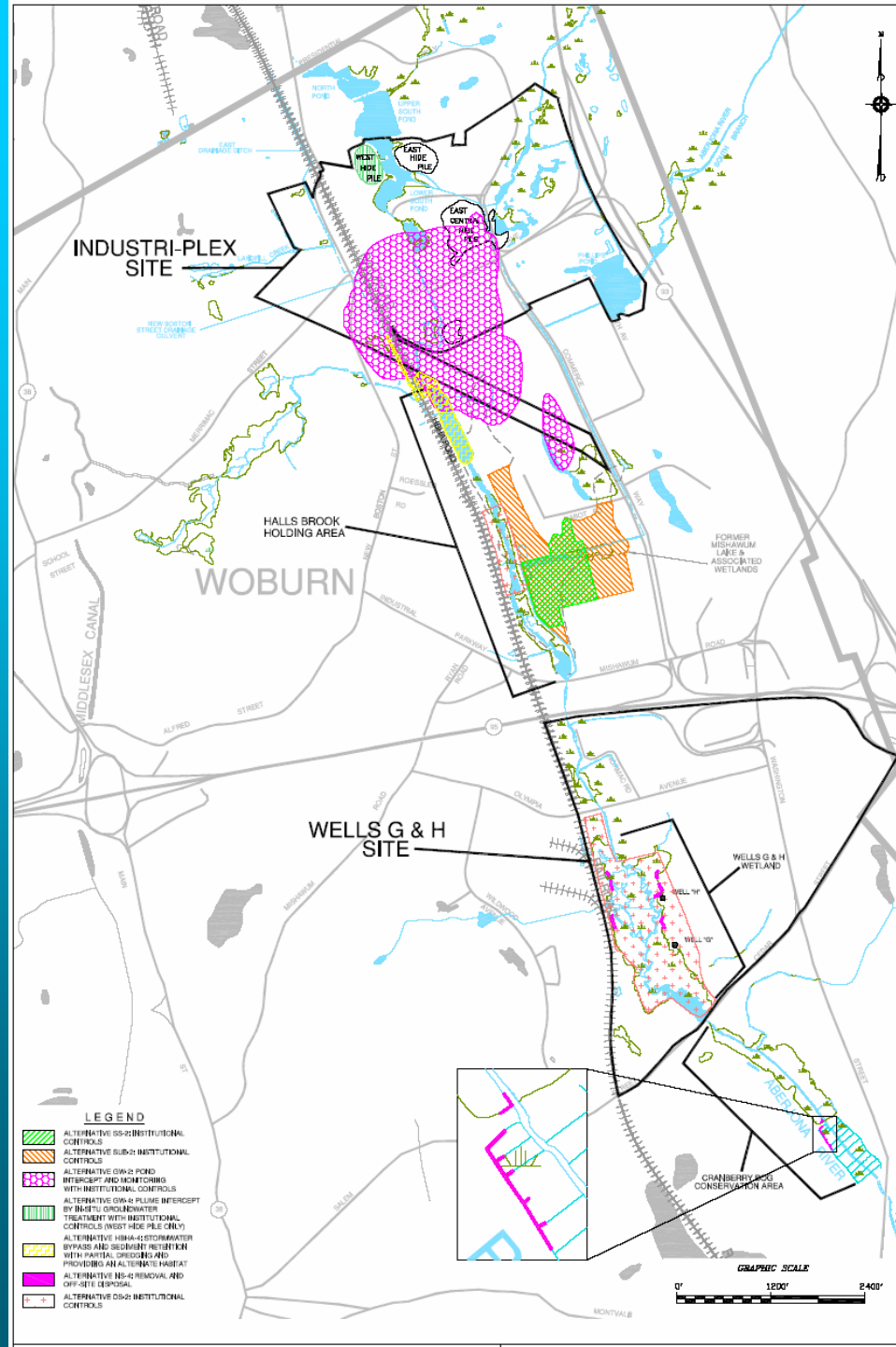
- Protects human health by controlling potential exposures to contaminated soil through institutional controls.
- Includes groundwater monitoring to evaluate the effectiveness of the remedy.

Former Mishawum Lakebed

arsenic in near surface soil

arsenic in sub-surface soil





Next Steps

- Formal Public Comment Period July 1 – August 1, 2005
- Provide Comments no later than August 1, 2005
 - Mail:
Joseph LeMay
US EPA Region 1 – New England
One Congress Street, Suite 1100 (HBO)
Boston, MA 02114
 - Email: lemay.joe@epa.gov
 - Provide verbal comments at 7:00 PM, July 27, 2005, Public Hearing, Shamrock School Cafeteria, 60 Green Street, Woburn, MA
- In the Fall, EPA expects to have reviewed all comments and signed a Record of Decision document and a summary of responses to public comments will then be made available to the public at the information repositories and on EPA's web site.